CPB Memorandum

CPB Netherlands Bureau for Economic Policy Analysis

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Explanatory note on the CPB world trade series

This note provides detailed information on the CPB world trade series and gives a comparison of these series with those of international organisations.

1 Introduction

This note provides detailed information on the world trade series used by *CPB Netherlands Bureau for Economic Policy Analysis* in its quarterly projections and analysis of the world economy.[1] The series also play a vital role in the projections of the Dutch economy as the forecast of export market growth has a major influence on the overall projection of the Dutch economy in the short term. The trade series are not only presented in the CPB's quarterly outlook publications but are also presented in the monthly world trade monitor.[2] Furthermore, the European Commission is using the CPB data to provide information on world trade in its *Quarterly Reports on the Euro Area*[3], its *Key indicators for the euro area*[4] updated before each Eurogroup meeting of the ECOFIN ministers and its semi-annual forecasts[5]. Finally, due to CPB - World Bank cooperation, the world trade data presented in the annual Global Economic Prospect reports[6] of the World Bank and its internal monthly reports on the world economy closely resemble the CPB world trade series.

After presenting information on the primary data sources used by CPB, the CPB world trade data are compared with the world trade data published by the OECD, the IMF and the WTO. The memorandum is concluded by an assessment of our world trade data and by possible improvements in the future.

2 The CPB foreign trade series

2.1 Value series

The CPB world trade database contains foreign trade value series of 23 OECD countries[7] and around 60 emerging economies. Those 60 emerging economies cover approximately 90% of foreign trade of all emerging economies. With the almost 85 countries in the database, coverage of total world trade value is around 97%.

[1] The quarterly note in English on the world economy and the underlying database is available at http://www.cpb.nl/eng/general/org/program/ic/outlook.html

[2] Available at http://www.cpb.nl/eng/general/org/program/ic/trademonitor.html

[3] Available at http://europa.eu.int/comm/economy_finance/publications/quarterly_report_on_the_euro_area_en.htm

[4] Available at http://europa.eu.int/comm/economy_finance/indicators/key_euro_area/keyeuroarea_en.htm

[5] Available at http://europa.eu.int/comm/economy_finance/publications/european_economy/forecasts_en.htm

[6] Available at http://www.worldbank.org/

[7] The current members of the OECD excluding Luxembourg (included in Belgium up to 1994) and the six countries that became member of the OECD after 1994: Mexico, South Korea, Poland, Hungary, the Czech Republic and the Slovak Republic. Those new OECD member countries are in the database treated as emerging economies. This aggregate of 23 OECD countries is also still used in the *IMF International Financial Statistics* under the heading 'industrial countries". (The IMF World Economic Outlook has the country group advanced economies instead of industrial countries; this group is wider and also contains the newly industrialized Asian economies.)

The two primary sources used for the value series concerning imports and exports are:

1. OECD Main Economic Indicators (MEI) [8]
2. IMF International Financial Statistics (IFS)

These two sources contain data provided by national statistical offices and customs offices. MEI trade series are already seasonally adjusted. The international organisations have done for some of the series the seasonal adjustment and the switch from local currency in US dollars. Almost all MEI trade series are calendar-adjusted.[9] All IFS trade series are not seasonally adjusted and not calendar-adjusted. IFS trade series used are seasonally adjusted by us. However, calendar adjustments are not made.

These primary sources are complemented with data directly taken from national sources.[10] Moreover, if the two primary sources do not cover the most recent data releases, the series are updated using the information available on the internet-sites of national statistical offices and central banks, the national summary data pages of the IMF's Dissemination Standard Bulletin Board (DSBB)[11] or through Thomson/Datastream (based on releases of national statistical offices and of central banks).

For recent months, information of some of the smaller countries may not be available. If so, value growth of such a country is set equal to that of its own region calculated on the available country information.

Data series for the OPEC countries in particular are either missing completely or not very up to date in the IFS.[12] Estimation of missing OPEC trade data is carried out in a special way. Concerning import values, use is made of the information on exports of OECD countries to OPEC countries as available in the *OECD Monthly Statistics of International Trade* or directly

[8] Trade data in the MEI may differ from those shown in *OECD Monthly Statistics of International Trade*. Generally, national statistical institutes are the source for the MEI data while customs offices provide data for certain countries published in Monthly Statistics of International Trade. The conversion to US dollars and the timing of the introduction of revisions may also account for differences with the data in Monthly Statistics of International Trade. As the MEI data refer only to total trade (without breakdown by product or country of origin or consumption), they may be available more quickly than the detailed data published in Monthly Statistics of International Trade. Finally, the MEI data are mostly working-day adjusted and always seasonally adjusted while the data shown in the *OECD Monthly Statistics of International Trade* are unadjusted. See also OECD, Main Economic Indicators, explanatory note, http://www.oecd.org/dataoecd/3/10/18630152.pdf

[9] As yearly data are constructed as the sum of monthly data and almost all series are calendar-adjusted, there is some minor bias in the yearly data in the CPB world trade database.

[10] Directly taken from national sources are the trade series of the United Kingdom, Belgium, Italy and the Netherlands. For the UK, the balance of payments data are used, providing in our view a preferable price-volume split vis-à-vis the customs data. The Italian series taken from the national source are considered preferable on the basis of the way they are seasonally adjusted. The Belgian series taken from the national source exclude re-exports.

[11] See http://dsbb.imf.org/Applications/web/sddsnsdppage/

[12] Information is missing completely for about 20% of total OPEC trade. The rest has an average availability lag of approximately 1 year.

from national sources. This is supplemented with estimates on exports of non-OECD countries to OPEC.[13] Concerning export values of OPEC countries, use is made of volume and price information available in the monthly *Oil Market Report* of the International Energy Agency.[14]

The data series of the emerging economies are aggregated into series for 4 regions by adding up value series in US dollars. The following regions are distinguished:

1. OPEC
2. Asian newly industrialised countries (Taiwan, Hong Kong, Singapore and South Korea)
3. Transition countries (central and eastern European countries including Turkey and including countries that were part of the Soviet Union)
4. Other emerging countries

2.2 Price series

The database contains foreign trade price series of 22 OECD and the 4 Asian newly industrialised countries.[15] The 26 countries cover almost 75% of total world trade.[16]

The two primary sources used for the foreign trade price series are:

1. OECD Monthly Statistics of International Trade (MSIT)
2. IMF International Financial Statistics (IFS)

The MSIT is used for OECD countries including South Korea, while the IFS is used for Singapore and Hong Kong.

These primary sources are complemented with data directly taken from national sources.[17] If the two primary sources do not cover the most recent data releases, the price series are updated using the same sources as the value series (see section 2.1).

Preferably, proper import and export price indices are used, as unit value series from the merchandise trade statistics suffer from composition effects, due to product composition of the

[13] Exports of non-OECD countries to OPEC are assumed to increase in line with the OECD exports to this area, corrected for differences in total export growth to the world between non-OECD and OECD.

[14] Starting point is the trend in the OPEC exports volume. Oil export is around 80% of total exports of the OPEC countries. Non-oil exports are assumed to increase in line with world exports.

[15] The database does not contain price series for Iceland and the OECD countries mentioned in footnote 7.

[16] Including price series for the OPEC region, primarily based on oil price developments, the coverage is almost 80%.

[17] For countries mentioned in footnote 10 national sources are used for the foreign trade price series. In addition, national sources are used for price series of Taiwan and Finland.

unit value for a given customs class varying from period to period.[18] If proper price indices are not available, price deflators from the national accounts or unit value series are used.[19]

Except for the Asian new industrialized countries, trade price indices for the emerging country regions are constructed by us using a Paasche-index and taking into account changing commodity weights. In formulae:

$$px_{i,t} = \left[\beta_{com,i,t}\,(pcom_t)^{-1} + \beta_{e,i,t}\,(pe_t)^{-1} + (1-\beta_{com,i,t}-\beta_{e,i,t})(pmnd_{i,t})^{-1}\right]^{-1} \tag{2.1}$$

$$pmnd_{i,t} = \sum_{rcMS} \left(\mu_{r,i}\, px_{r,t}\right) \tag{2.2}$$

$$pm_{i,t} = \sum_{r} \lambda_{r,i}\; px_{r,t} \tag{2.3}$$

$$\sum_{r} \lambda_{r,i} = 1 \tag{2.4}$$

x : export value, in US dollars
px : export price, goods, in US dollars, index
pm : import price, goods, in US dollars, index
pmnd : import price of manufactured goods, in US dollars, index
pcom : world price raw materials excluding energy, in US dollars, index (source: HWWA)
pe : world price energy, in US dollars, index (source: HWWA)

μ : geographical import weight for industrial products
β : export weight by type of good
λ : geographical import weight for total goods

t : year t
i : group of emerging countries
r : region (the four groups of emerging countries, United States, Japan and EU15).
MS : major suppliers of industrial products (United States, Japan, EU15 and Asian new industrialized countries)

[18] For more information, see for instance IMF Electronic Discussion Group on developing a revised manual for the export and import price indices, http://www.imf.org/external/np/sta/tegeipi/index.htm

[19] Quarterly price series from the national accounts are used for France. For recent months not yet covered by the quarterly national accounts, it is assumed that French prices are increasing in line with German prices. Unit values are currently used for Canada, New Zealand, Austria, Belgium, Denmark, Ireland, Italy, Norway, Spain and Switzerland. Estimated price series are used for Greece and Iceland.

Export prices are a harmonic weighted average of the world prices of energy and non-energy raw materials and of the relevant world trade price of manufactured products (2.1). This fits in the preference to follow standard procedures: measuring volumes as Laspeyres indices and measuring prices as Paasche indices. The relevant world trade price of manufactured products is proxied by the average export price of major suppliers (2.2). It is taken into account that for non-OPEC regions the weight of energy in total exports shows a trend decline and is also influenced by the price of energy in the short term.

Import prices are a trade-weighted average of export prices of suppliers (2.3). Thus, it is assumed that price discrimination (pricing to markets) is not relevant for emerging countries (in contrast with advanced economies).

The weights used in the calculations are based on 1990 data.

2.3 Volume series

The foreign trade volume series are calculated from the value and price series. In formulae:

$$x_t^r = X_t^r \,/\, px_t^r \tag{2.5}$$

$$m_t^r = M_t^r \,/\, pm_t^r \tag{2.6}$$

$$wt_t = \left(\sum_r x_t^r + \sum_r m_t^r \right) / 2 \tag{2.7}$$

x : export volume
X : export value, in US dollars
px : export price, in US dollars, index
m : import volume
M : import value, in US dollars
Pm : import price, in US dollars, index
wt : world trade volume

t : year t
r : region (the four groups of emerging countries, United States, Japan and EU15).

World trade volume is defined as the arithmetic average of world exports and world imports (2.7).

3 A comparison with other world trade series[20]

3.1 World trade volume series

3.1.1 Comparison with the OECD Main Economic Indicators

The *OECD Main Economic Indicators* (MEI) contain quarterly volume series on world trade in goods and services.[21] World export (import) of goods and services volumes are constructed as weighted averages of the growth rates of the volume of exports (imports) of individual countries, with the country weights based on shares of global goods and services export (import) values in 2000, expressed in US dollars. World trade is calculated as an arithmetic average of the volume of world imports and exports.

International trade data for individual OECD countries are obtained from national accounts data supplied by national authorities. For the non-OECD countries volume data are constructed from balance-of-payments value data supplied by the IMF and prices data obtained from IMF, World Bank and national sources.

The measure of world trade is reported in the MEI only where the available data covers at least 60 per cent of the relevant aggregate, with the weight of each country for this calculation based on 2000 bilateral trade matrices (source UN COMTRADE).[22] When the 60 per cent condition is satisfied, estimates are made for the remaining countries based on Secretariat projections. Typically, the most recent estimate of world trade will be based on official data for most OECD countries, but Secretariat projections for most non-OECD countries.

There are five key differences between the world trade series of the MEI and the CPB:

1. The CPB series are more up to date. For instance in December 2004, the MEI series ends in the second quarter and the CPB series in October. The additional information of up to four months is in our view crucial in monitoring world trade and the world economy.
2. The MEI series is for non-OECD countries for the most recent quarters largely based on projections, while the CPB series is based on published data for key non-OECD countries covering 75 to 80% of foreign trade of this group of countries.
3. The MEI only provides a disaggregation in OECD and non-OECD trade series, while the CPB trade database provides a much richer disaggregation.
4. The MEI series concerns goods and services based on national accounts data; the CPB series concerns goods and is mainly based on international trade statistics.

[20] Vintages used in the comparison are mentioned in the annex.

[21] The most recent MEI information on world trade is also available at http://www.oecd.org/dataoecd/55/27/18628014.pdf

[22] For more information on the COMTRADE database, see http://unstats.un.org/unsd/comtrade/

5. The MEI series are not accompanied by a series on world trade prices; the CPB world trade database provides both series on world trade volume and world trade prices as well as world trade values.

   Despite these differences, the two series are very similar (see Figure 3.1, Figure 3.2 and Table 3.1). The correlation between the annual growth rates is 0.98, while the difference between the growth rates in the years 1992-2003 is only 0.1%-point per year. For most recent quarters, world trade has been increasing somewhat stronger according to the CPB. However, this difference may diminish when projections for non-OECD countries are replaced by actual data in the MEI series.

Figure 3.1 Comparison of CPB and OECD MEI world trade volume series, 1991-2004

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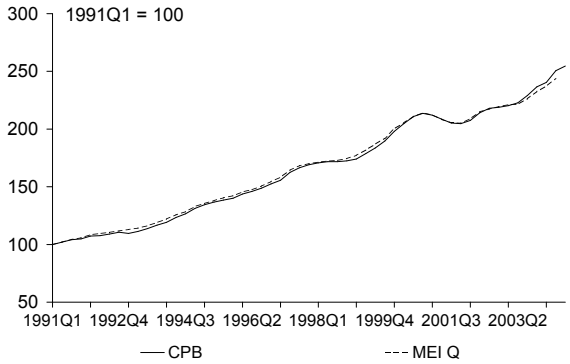

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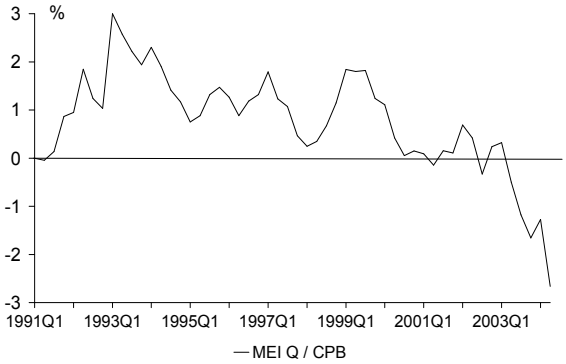

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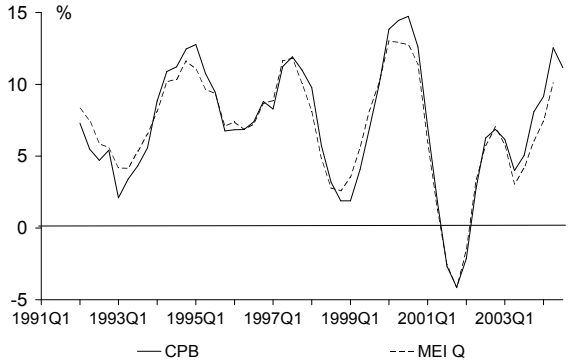
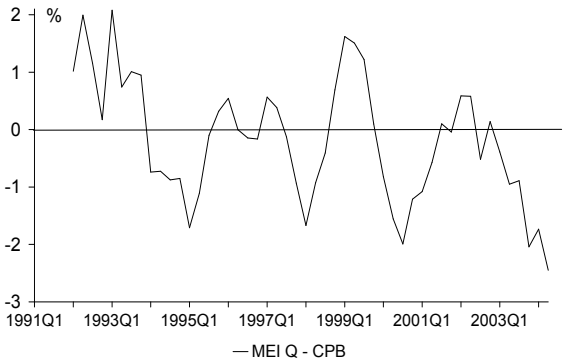
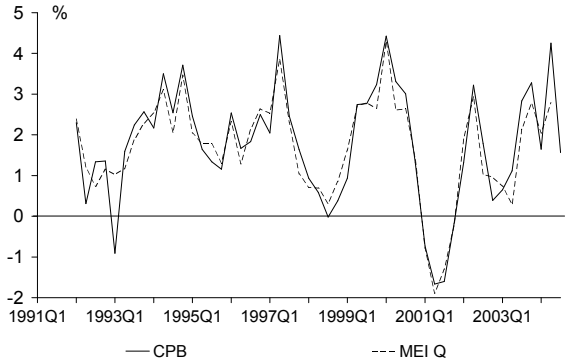


%-points difference in 4-quarter %



1-quarter %



%-points difference in 1-quarter %

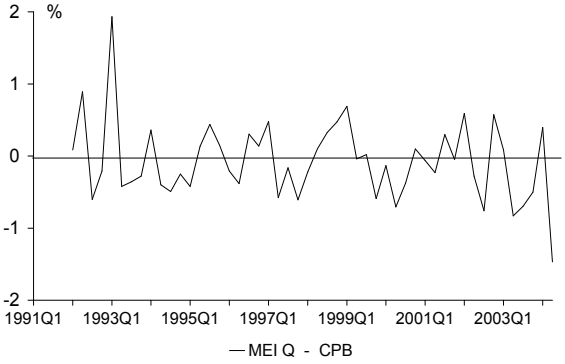


Figure 3.2 Comparison of CPB and OECD MEI world trade volume series, 1991-2003

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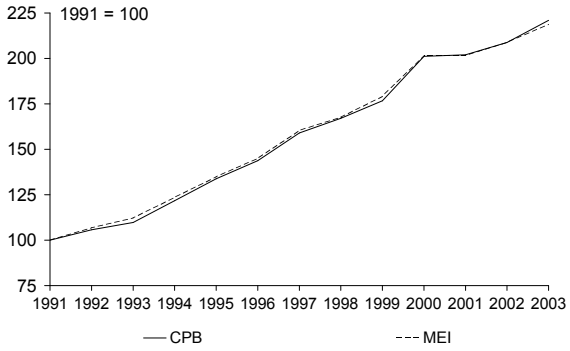

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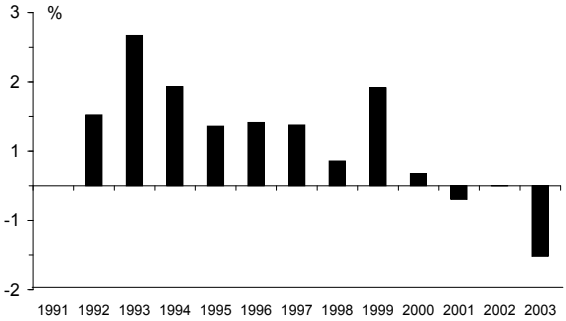
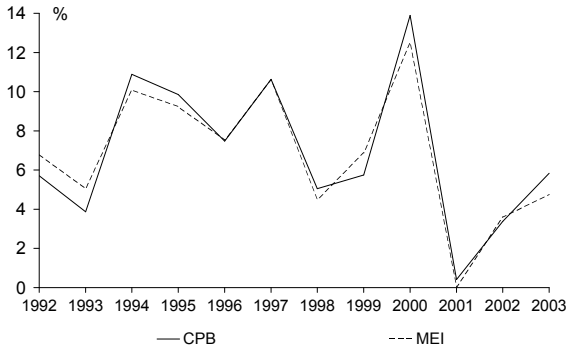


1-year %



%-points difference in 1-year %

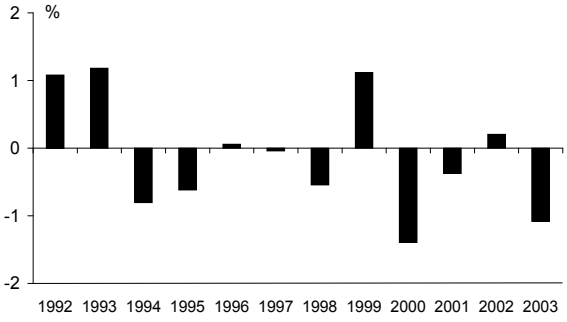


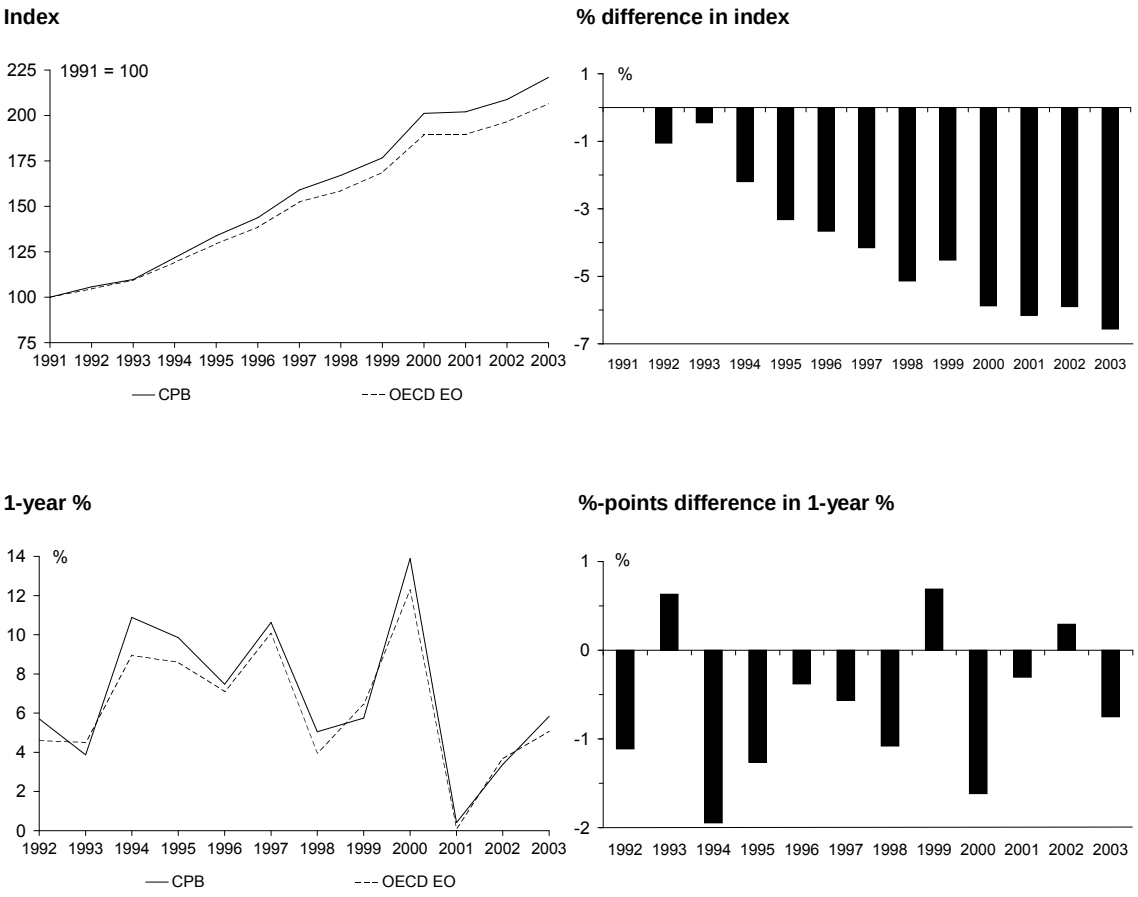
Table 3.1 Comparison of CPB and OECD MEI world trade volume series

	CPB	OECD MEI	OECD MEI-CPB	
	Annual percentage changes			
1992	5.7	6.8	1.1	
1993	3.9	5.0	1.2	
1994	10.9	10.1	– 0.8	
1995	9.9	9.2	– 0.6	
1996	7.5	7.5	0.1	
1997	10.6	10.6	0.0	
1998	5.0	4.5	– 0.5	
1999	5.8	6.9	1.1	
2000	13.9	12.5	– 1.4	
2001	0.4	0.0	– 0.4	
2002	3.4	3.6	0.2	
2003	5.8	4.8	– 1.1	
Correlation			0.98	
Mean	6.9	6.8		
mean difference			– 0.1	
mean absolute difference			0.7	
biggest negative difference			– 1.4	(in 2000)
biggest positive difference			1.2	(in 1993)
differences in acceleration			0.0%	

3.1.2 Comparison with the OECD Economic Outlook

Historical data (and projections) on world trade are also presented in the OECD Economic Outlook.[23] As in the *OECD Main Economic Indicators*, it concerns the world trade in goods and services based on national accounts statistics. Nevertheless, there are clear differences between the two series; the most likely reason is different underlying series for non-OECD regions. The differences between the Outlook series and the CPB series are somewhat bigger than between the MEI and CPB series (Figure 3.3 and Table 3.2).

Figure 3.3 Comparison of CPB and OECD Economic Outlook world trade volume series, 1991-2003



[23] In the OECD Economic Outlook, world trade data are only shown for a limited number of years in the tables on the summary of projection and the table on world trade in the main text, while it is not shown in the statistical annex (also available at http://www.oecd.org/document/61/0,2340,en_2649_33733_2483901_1_1_1_1,00.html) and the accompanying cd-rom. For the comparison, the series is calculated by us from the underlying series on exports and imports.

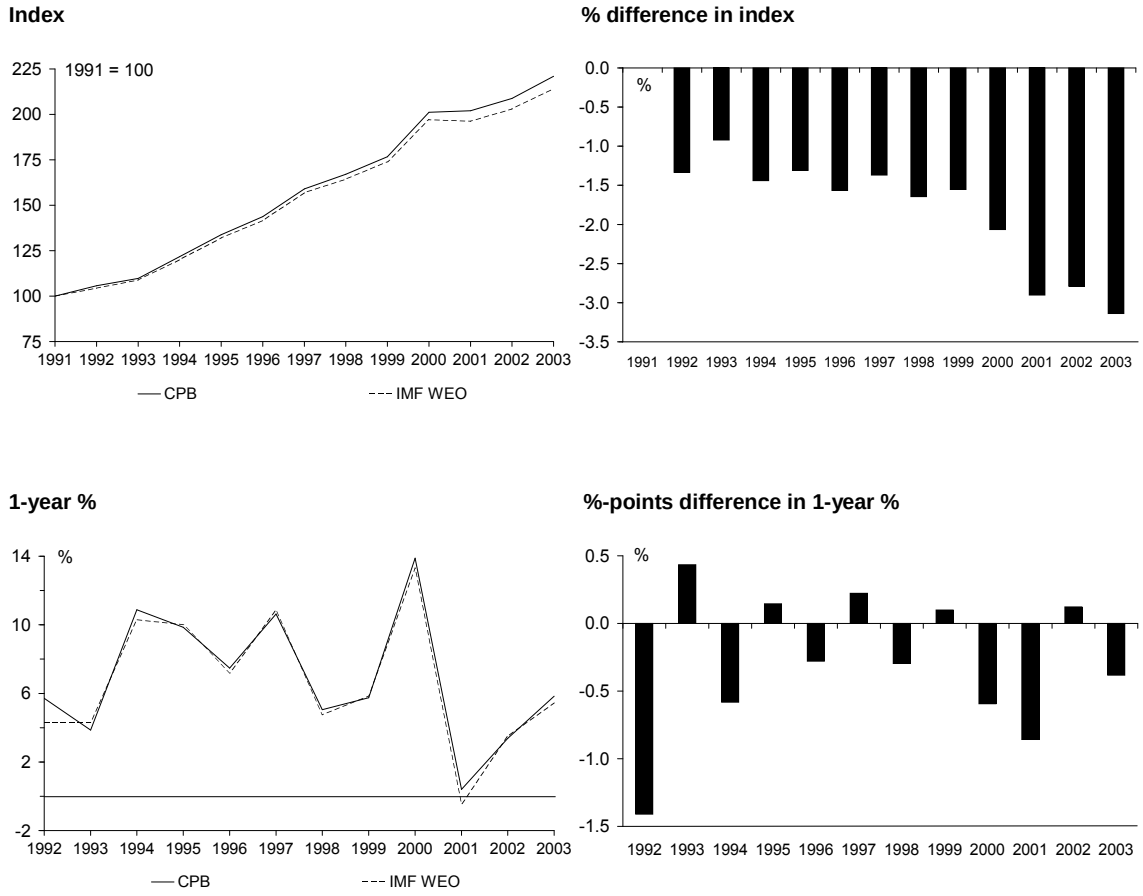
Table 3.2 Comparison of CPB and OECD Economic Outlook world trade volume series

	CPB	OECD EO	OECD EO-CPB	
	Annual percentage changes			
1992	5.7	4.6	– 1.1	
1993	3.9	4.5	0.6	
1994	10.9	8.9	– 1.9	
1995	9.9	8.6	– 1.3	
1996	7.5	7.1	– 0.4	
1997	10.6	10.1	– 0.6	
1998	5.0	4.0	– 1.1	
1999	5.8	6.4	0.7	
2000	13.9	12.3	– 1.6	
2001	0.4	0.1	– 0.3	
2002	3.4	3.7	0.3	
2003	5.8	5.1	– 0.7	
Correlation			0.98	
Mean	6.9	6.3		
mean difference			– 0.6	
mean absolute difference			0.9	
biggest negative difference			– 1.9	(in 1994)
biggest positive difference			0.7	(in 1999)
differences in acceleration			0.0%	

3.1.3 Comparison with the IMF World Economic Outlook

Historical data (and projections) on world trade in goods are also presented in the *IMF World Economic Outlook*.[24] No information is provided on the underlying statistics. However, as data on world trade in goods and services is also provided, the series is probably based on national accounts statistics.[25] Concerning the world trade in goods, the series of the CPB and the IMF are quite similar (Figure 3.4 and Table 3.3).

Figure 3.4 Comparison of CPB and IMF World Economic Outlook world trade volume series (goods), 1991-2003



[24] From the IMF World Economic Outlook database (http://www.imf.org/external/ns/cs.aspx?id=28), the series cannot be downloaded. However, the series can easily be calculated from the downloadable series on world exports and imports.

[25] The availability of the two series makes comparison possible. In the years 1992-2003, the correlation between the two series is 0.99; the volume growth on goods and services is 0.3%-points per year less; the mean absolute difference is 0.5%-points; the range of differences runs from 1.5 to -1.2%-points.

Table 3.3 Comparison of CPB and IMF World Economic Outlook world trade volume series (goods)

	CPB	IMF WEO	IMF WEO-CPB	
	Annual percentage changes			
1992	5.7	4.3	– 1.4	
1993	3.9	4.3	0.4	
1994	10.9	10.3	– 0.6	
1995	9.9	10.0	0.1	
1996	7.5	7.2	– 0.3	
1997	10.6	10.9	0.2	
1998	5.0	4.8	– 0.3	
1999	5.8	5.9	0.1	
2000	13.9	13.3	– 0.6	
2001	0.4	-0.4	– 0.9	
2002	3.4	3.5	0.1	
2003	5.8	5.5	– 0.4	
Correlation			0.99	
Mean	6.9	6.6		
mean difference			– 0.3	
mean absolute difference			0.5	
biggest negative difference			– 1.4	(in 1992)
biggest positive difference			0.4	(in 1993)
differences in acceleration			9.1%	

Table 3.4 Comparison of CPB and IMF World Economic Outlook world trade series (goods & services)

	CPB	IMF WEO	IMF WEO-CPB	
	Annual percentage changes			
1992	5.7	4.5	– 1.2	
1993	3.9	3.7	– 0.2	
1994	10.9	9.1	– 1.8	
1995	9.9	9.2	– 0.7	
1996	7.5	7.1	– 0.4	
1997	10.6	10.5	– 0.1	
1998	5.0	4.4	– 0.6	
1999	5.8	5.9	0.1	
2000	13.9	12.5	– 1.4	
2001	0.4	0.2	– 0.2	
2002	3.4	3.3	– 0.1	
2003	5.8	5.1	– 0.7	
Correlation			0.99	
Mean	6.9	6.3		
mean difference			– 0.6	
mean absolute difference			0.6	
biggest negative difference			– 1.8	(in 1994)
biggest positive difference			0.1	(in 1999)
differences in acceleration			9.1%	

Figure 3.5 Comparison of CPB and IMF World Economic Outlook world trade volume series (goods & services), 1991-2003

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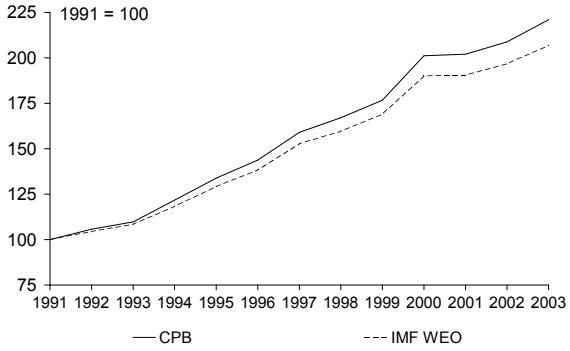
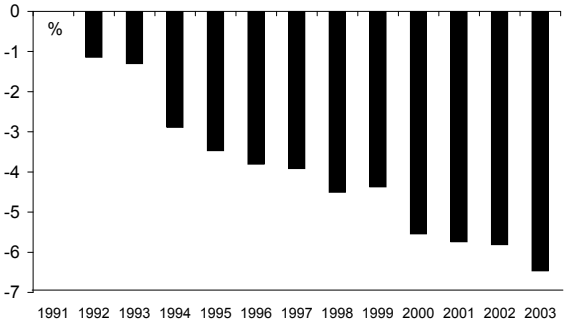
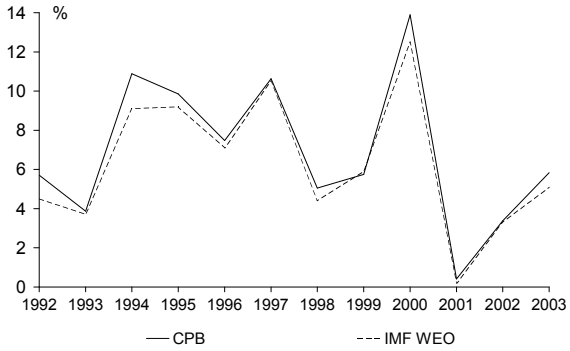


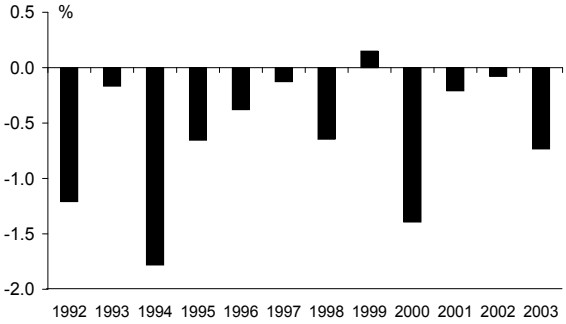
% difference in index



1-year %



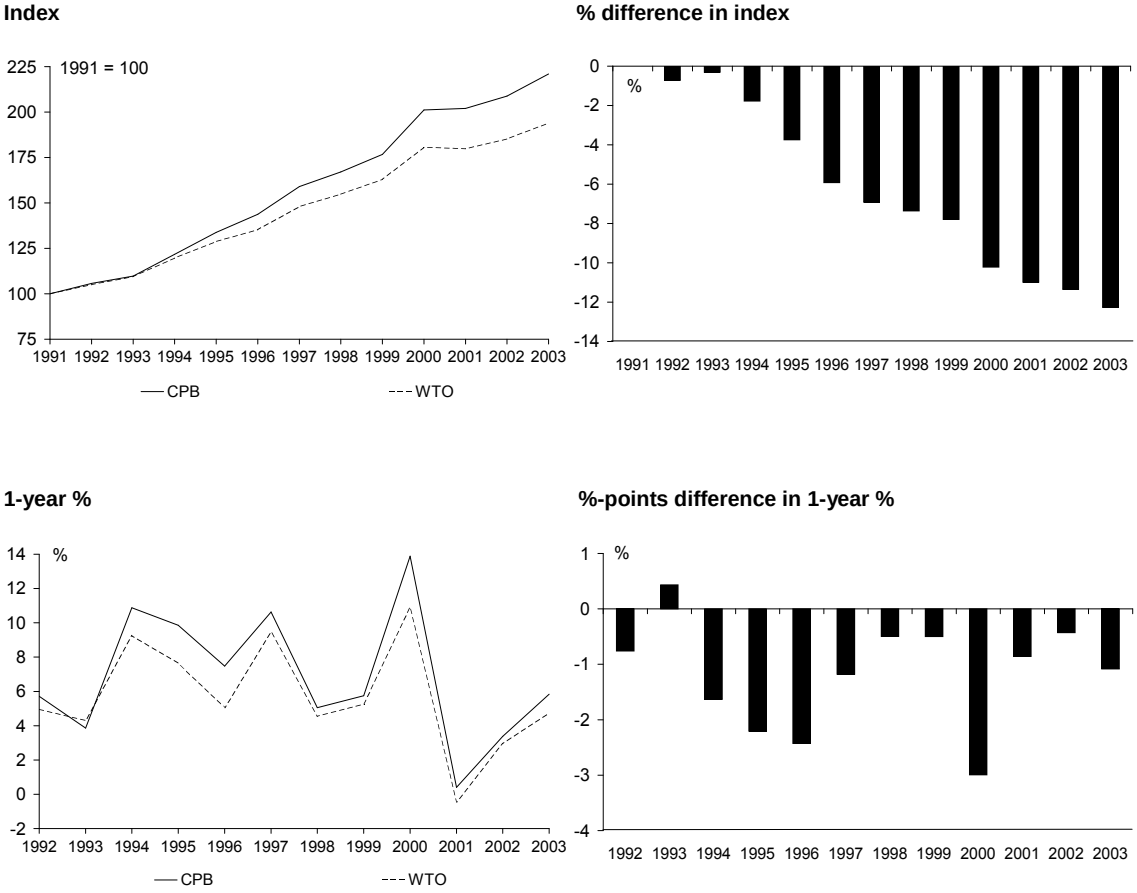
%-points difference in 1-year %



3.1.4 Comparison with the WTO world trade database

Historical data on world total merchandise export and import volumes are also available in the WTO world trade database[26] and in the annual WTO publication *International Trade Statistics*.[27] The series are based on a range of different international and national sources. Aggregation of the indices to obtain a world total is a two tier process. First, export and import unit values from national and international sources are completed with WTO Secretariat estimates for missing data. They are then aggregated to obtain regional totals. The volume index for each region is obtained by dividing the respective trade value index for each region by the corresponding regional unit value index. Second, to obtain the total world merchandise volume index, regional unit value indices are aggregated and the world trade value is deflated by the world unit value index. Throughout the aggregation process trade values of the previous year are used.

Figure 3.6 Comparison of CPB and WTO world trade volume series, 1991-2003



[26] Available at http://stat.wto.org/StatisticalProgram/WSDBStatProgramHome.aspx?Language=E .

[27] Available at http://www.wto.org/english/res_e/statis_e/statis_e.htm .

The WTO is publishing its yearly data in the spring of next year, as do most other international institutes.

The WTO series are quite different from the series from the CPB, OECD MEI, OECD EO and IMF WEO (see Figure 3.6, Table 3.5 and Annex Table A.1). Main reason is probably the use of unit value series instead of proper price series.

Table 3.5 Comparison of CPB and WTO world trade volume series

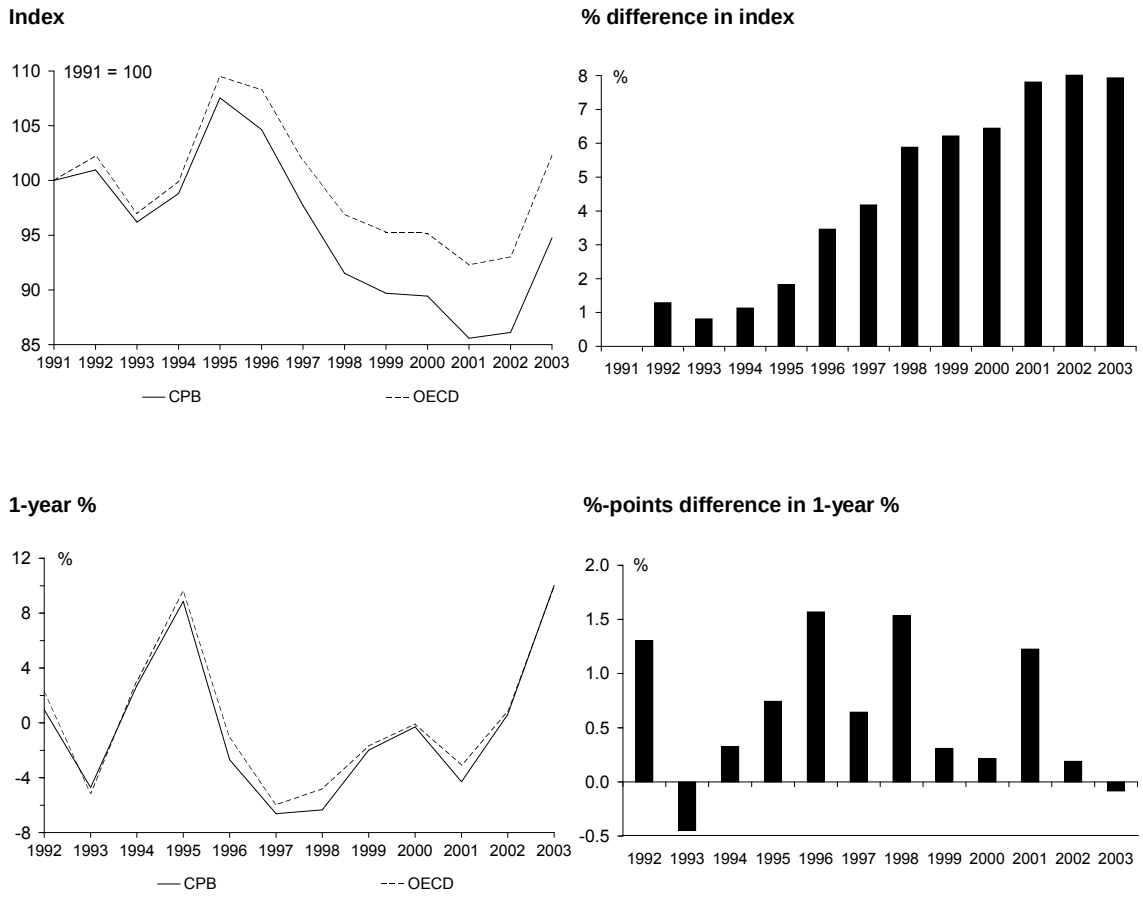
	CPB	WTO	WTO-CPB	
	Annual percentage changes			
1992	5.7	5.0	– 0.8	
1993	3.9	4.3	0.4	
1994	10.9	9.3	– 1.6	
1995	9.9	7.7	– 2.2	
1996	7.5	5.1	– 2.4	
1997	10.6	9.4	– 1.2	
1998	5.0	4.6	– 0.5	
1999	5.8	5.3	– 0.5	
2000	13.9	10.9	– 3.0	
2001	0.4	– 0.4	– 0.9	
2002	3.4	2.9	– 0.4	
2003	5.8	4.7	– 1.1	
Correlation			0.98	
Mean	6.9	5.7		
mean difference			– 1.2	
mean absolute difference			1.2	
biggest negative difference			– 3.0	(in 2000)
biggest positive difference			0.4	(in 1993)
differences in acceleration			0.0%	

3.2 World trade price series

3.2.1 Comparison with OECD Economic Outlook

Historical data (and projections) on world trade prices are available in the OECD Economic Outlook.[29] It concerns the world trade in goods and services based on national accounts statistics. The Outlook and CPB series are quite similar (Figure 3.7 and Table 3.6). In the period 1991-2003, the average price increase in the Outlook series is somewhat bigger than in the CPB series. This is in contrast with the differences for the volume series where the average volume growth in the Outlook series is somewhat smaller than in the CPB series.

Figure 3.7 Comparison of CPB and OECD Economic Outlook world trade prices, 1991-2003



[29] In the OECD Economic Outlook, trade prices measured in US dollars are only shown for a limited number of years in the table on world trade in the main text and only for the OECD and non-OECD aggregates. For the comparison made here, the "OECD Economic Outlook" series on world trade prices is calculated by us from the underlying country series on export and import prices given in the OECD Economic Outlook database.

Table 3.6 Comparison of CPB and OECD Economic Outlook world trade prices

	CPB	OECD EO	OECD EO-CPB	
	Annual percentage changes			
1992	1.0	2.3	1.3	
1993	– 4.7	– 5.2	– 0.4	
1994	2.7	3.0	0.3	
1995	8.9	9.6	0.7	
1996	– 2.7	– 1.1	1.6	
1997	– 6.6	– 6.0	0.6	
1998	– 6.3	– 4.8	1.5	
1999	– 2.0	– 1.7	0.3	
2000	– 0.3	– 0.1	0.2	
2001	– 4.3	– 3.1	1.2	
2002	0.6	0.8	0.2	
2003	10.0	9.9	– 0.1	
Correlation			0.99	
Mean	– 0.3	0.3		
mean difference			0.6	
mean absolute difference			0.7	
biggest negative difference			– 0.4	(in 1993)
biggest positive difference			1.6	(in 1996)
differences in acceleration			0.0%	

3.2.2 Comparison with IMF World Economic Outlook

Historical data (and projections) on world trade prices of goods are also presented in the *IMF World Economic Outlook*. No information is provided on the underlying statistics. However, as data on the world trade price of goods and services is also provided, the series is probably based on national accounts statistics. Concerning the world trade price of goods, the series of the CPB and the IMF are quite similar (Figure 3.8 and Table 3.7).

Figure 3.8 Comparison of CPB and IMF World Economic Outlook world trade prices (goods), 1991-2003

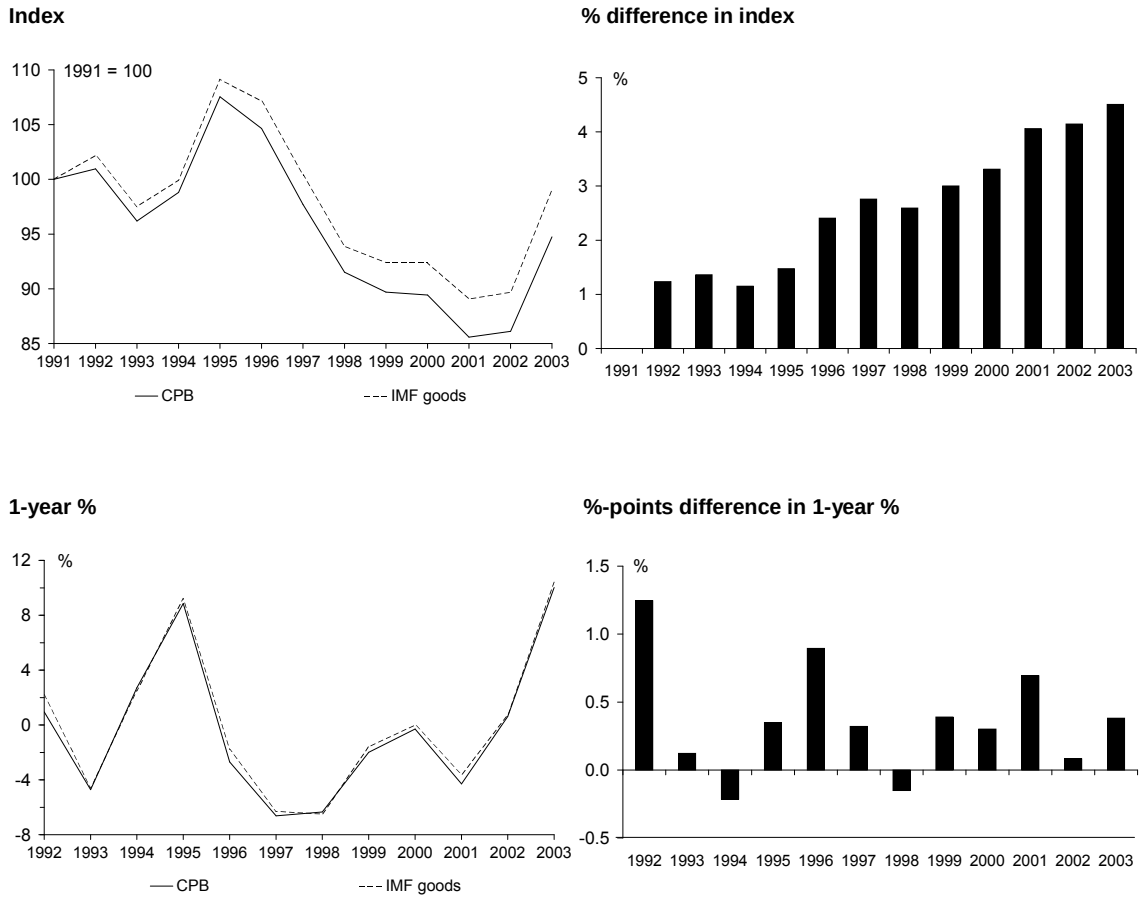


Table 3.7 Comparison of CPB and IMF World Economic Outlook world trade prices (goods)

	CPB	IMF WEO	IMF WEO-CPB	
	Annual percentage changes			
1992	1.0	2.2	1.2	
1993	– 4.7	– 4.6	0.1	
1994	2.7	2.5	– 0.2	
1995	8.9	9.2	0.3	
1996	– 2.7	– 1.8	0.9	
1997	– 6.6	– 6.3	0.3	
1998	– 6.3	– 6.5	– 0.2	
1999	– 2.0	– 1.6	0.4	
2000	– 0.3	0.0	0.3	
2001	– 4.3	– 3.6	0.7	
2002	0.6	0.7	0.1	
2003	10.0	10.4	0.4	
Correlation			1.00	
Mean	– 0.3	0.1		
mean difference			0.4	
mean absolute difference			0.4	
biggest negative difference			– 0.2	(in 1994)
biggest positive difference			1.2	(in 1992)
differences in acceleration			9.1%	

Table 3.8 Comparison of CPB and IMF World Economic Outlook world trade prices (goods & services)

	CPB	IMF WEO	IMF WEO-CPB	
	Annual percentage changes			
1992	1.0	2.6	1.6	
1993	– 4.7	– 3.8	0.9	
1994	2.7	2.5	– 0.2	
1995	8.9	8.8	– 0.1	
1996	– 2.7	– 1.5	1.2	
1997	– 6.6	– 5.9	0.7	
1998	– 6.3	– 5.5	0.8	
1999	– 2.0	– 1.9	0.1	
2000	– 0.3	– 0.6	– 0.3	
2001	– 4.3	– 3.4	0.9	
2002	0.6	1.1	0.5	
2003	10.0	10.4	0.4	
Correlation			0.99	
Mean	– 0.3	0.2		
mean difference			0.6	
mean absolute difference			0.6	
biggest negative difference			– 0.3	(in 2000)
biggest positive difference			1.6	(in 1992)
differences in acceleration			0.0%	

Figure 3.9 Comparison of CPB and IMF World Economic Outlook world trade prices (g & s), 1991-2003

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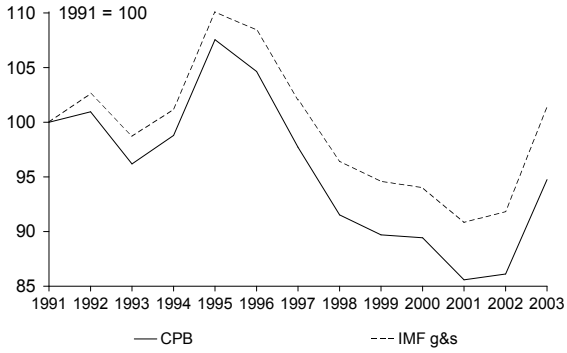
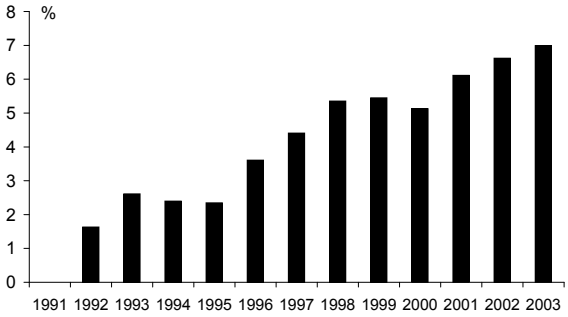
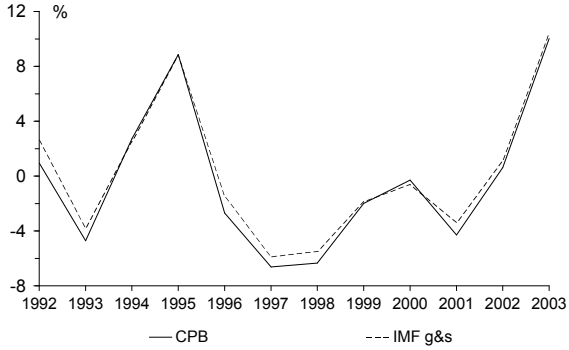


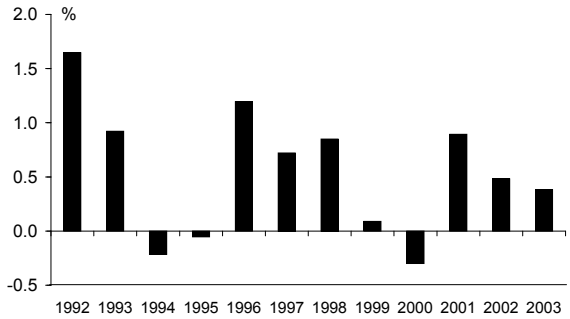
% difference in index



1-year %



%-points difference in 1-year %

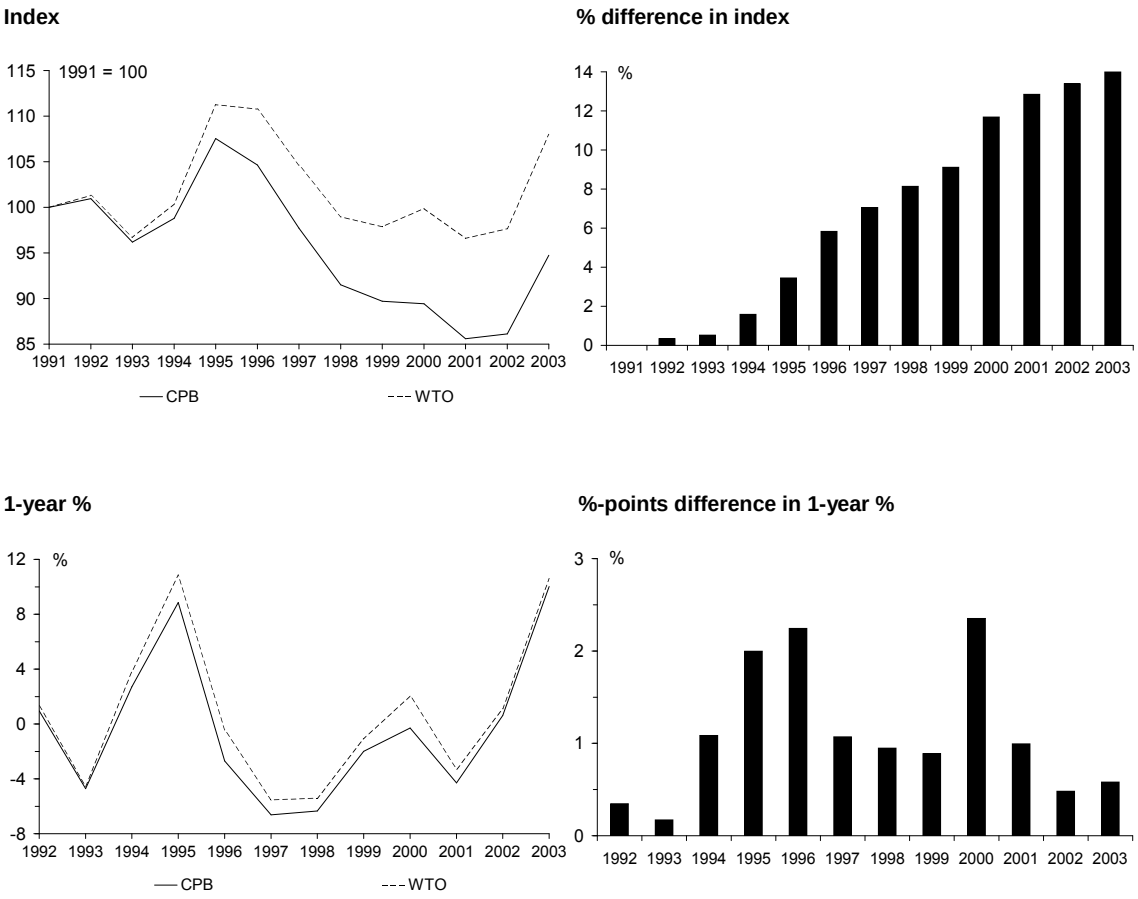


3.2.3 Comparison with WTO trade database

Historical data on world total merchandise export and import prices are also available in the WTO world trade database[30] and in the annual WTO publication *International Trade Statistics*.[31] The series concern unit values.

As for the world volume series, the WTO world price series are quite different from the series from the CPB, OECD EO and IMF WEO (see Figure 3.10, Table 3.9 and Annex Table A.2). Main reason is probably the use of unit value series instead of proper price series.

Figure 3.10 Comparison of CPB and WTO world trade prices, 1991-2003



[30] Available at http://stat.wto.org/StatisticalProgram/WSDBStatProgramHome.aspx?Language=E .

[31] Available at http://www.wto.org/english/res_e/statis_e/statis_e.htm .

Table 3.9 Comparison of CPB and WTO world trade prices

	CPB	WTO	WTO-CPB	
	Annual percentage changes			
1992	1.0	1.3	0.3	
1993	– 4.7	– 4.6	0.2	
1994	2.7	3.8	1.1	
1995	8.9	10.9	2.0	
1996	– 2.7	– 0.4	2.2	
1997	– 6.6	– 5.6	1.1	
1998	– 6.3	– 5.4	0.9	
1999	– 2.0	– 1.1	0.9	
2000	– 0.3	2.1	2.4	
2001	– 4.3	– 3.3	1.0	
2002	0.6	1.1	0.5	
2003	10.0	10.6	0.6	
Correlation			0.99	
Mean	– 0.3	0.8		
mean difference			1.1	
mean absolute difference			1.1	
biggest negative difference			0.2	(in 2000)
biggest positive difference			2.4	(in 1993)
differences in acceleration			0.0%	

4 The CPB series on the world export price of manufactured goods

The CPB world trade price of manufactured goods is constructed using the world trade price of total goods and world prices of energy and non-energy raw materials. The impact of relative price developments on weights is taking into account. The same holds for the trend decline in the weights of non-energy raw materials and energy. In formula:

$$pind_t = \left[1 - \pi_{com,t} - \pi_{e,t}\right] / \left[pg_t^{-1} - \pi_{com,t}\ pcom_t^{-1} - \pi_{e,t}\ pe_t^{-1}\right] \qquad (4.1)$$

pind : world price manufactured goods, in US dollars, index
pg : world trade price of goods, in US dollars, index
pcom : world price raw materials excluding energy, in US dollars, index (source: HWWA)
pe : world price energy, in US dollars, index (source: HWWA)
t : year t

High volatility in world prices of manufactured goods measured in US dollars is largely caused by exchange rate movements of the US dollar vis-à-vis other major currencies. The impact of this currency-related volatility in world prices on import prices in local currency is strongly mitigated by price discrimination in the international trade of manufactured goods.[32]

The United Nations (UN), the International Monetary Fund (IMF) and the World Trade Organisation (WTO) also publish data on the world price of manufactured goods.[33] The series of the United Nations only cover the export of developed economies and is based on data on unit values. The IMF publishes price changes for recent years in its World Economic Outlook.[34] A methodological note on the series is not available. The series of the WTO has a global coverage and is based on unit values.

The series of the CPB and the UN are quite similar (Figure 4.1 and Table 4.1). The slightly higher price rise over the period 1991-2003 in the UN series is plausible as the UN series only covers developed economies and export price increases of the other economies were probably

[32] See also G. van Welzenis, 2004, The impact of exchange rate changes on domestic inflation is mitigated by price discrimination, box in *Report AIECE Working Group on Foreign Trade*, CPB Document, no. 46, http://www.cpb.nl/nl/pub/document/46/doc46.pdf

[33] United Nations, *Monthly Bulletin of Statistics*; WTO*, International Trade Statistics*, http://www.wto.org/english/res_e/statis_e/statis_e.htm

[34] The series is not available in the WEO database on the IMF internet site but is provided by the IMF WEO database team.

less. The similarity is somewhat less between the CPB and IMF series (Figure 4.2 and Table 4.2) and even more so between the CPB and WTO series (Figure 4.3 and Table 4.3).

Figure 4.1 Comparison of CPB and UN price world export manufactured goods, 1991-2003

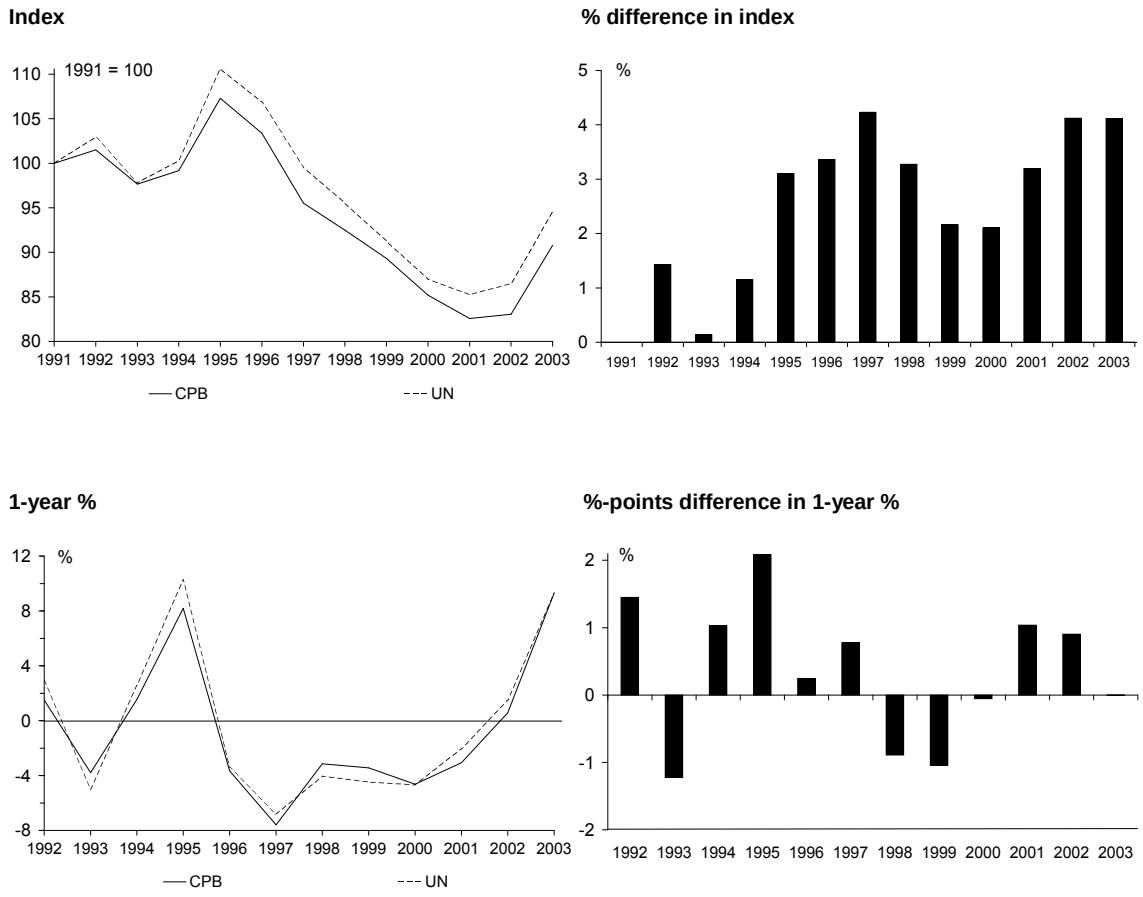


Table 4.1 Comparison of CPB and UN world export price manufactured goods

	CPB	UN	UN-CPB	
	Annual percentage changes			
1992	1.5	3.0	1.4	
1993	– 3.8	– 5.0	– 1.2	
1994	1.5	2.6	1.0	
1995	8.2	10.3	2.1	
1996	– 3.7	– 3.4	0.2	
1997	– 7.6	– 6.8	0.8	
1998	– 3.1	– 4.0	– 0.9	
1999	– 3.4	– 4.5	– 1.0	
2000	– 4.6	– 4.7	– 0.1	
2001	– 3.1	– 2.0	1.0	
2002	0.6	1.5	0.9	
2003	9.3	9.3	0.0	
Correlation			0.99	
Mean	– 0.7	– 0.3		
mean difference			0.4	
mean absolute difference			0.9	
biggest negative difference			– 1.2	(in 1993)
biggest positive difference			2.1	(in 1995)
differences in acceleration			0.0%	

Figure 4.2 Comparison of CPB and IMF World Economic Outlook world export price manufactured goods, 1991-2003

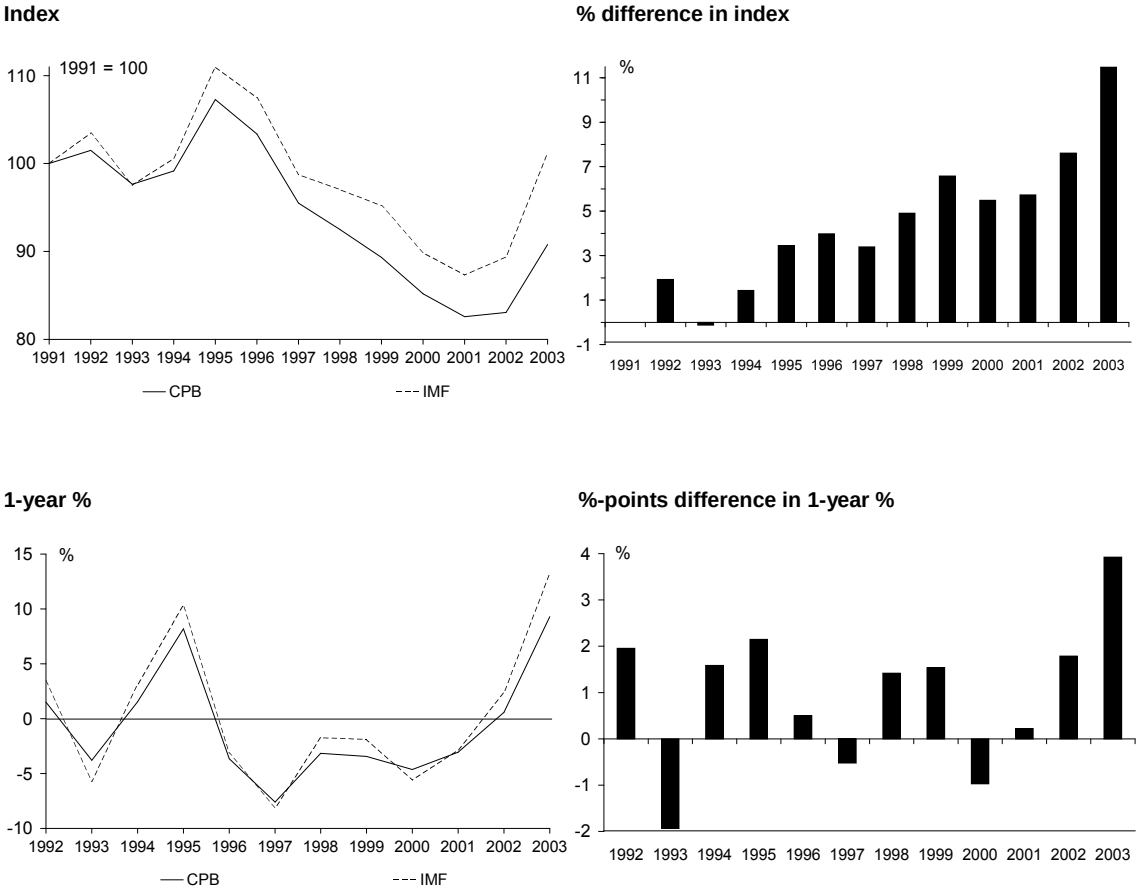


Table 4.2 Comparison of CPB and IMF World Economic Outlook world export price manufactured goods

	CPB	IMF	IMF-CPB	
	Annual percentage changes			
1992	1.5	3.5	2.0	
1993	– 3.8	– 5.7	– 1.9	
1994	1.5	3.1	1.6	
1995	8.2	10.3	2.1	
1996	– 3.7	– 3.2	0.5	
1997	– 7.6	– 8.1	– 0.5	
1998	– 3.1	– 1.7	1.4	
1999	– 3.4	– 1.9	1.5	
2000	– 4.6	– 5.6	– 1.0	
2001	– 3.1	– 2.8	0.2	
2002	0.6	2.4	1.8	
2003	9.3	13.2	3.9	
Correlation			0.99	
Mean	– 0.7	0.3		
mean difference			1.0	
mean absolute difference			1.5	
biggest negative difference			– 1.9	(in 1993)
biggest positive difference			3.9	(in 2003)
differences in acceleration			0.0%	

Figure 4.3 Comparison of CPB and WTO world export price manufactured goods, 1991-2003

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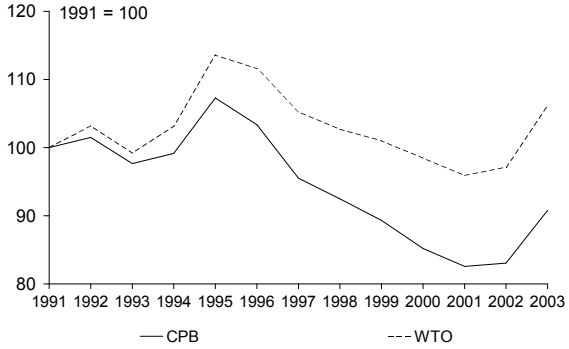
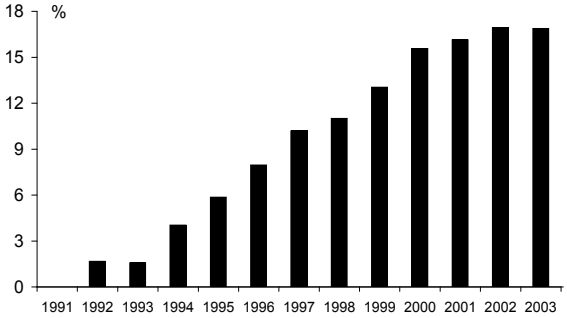
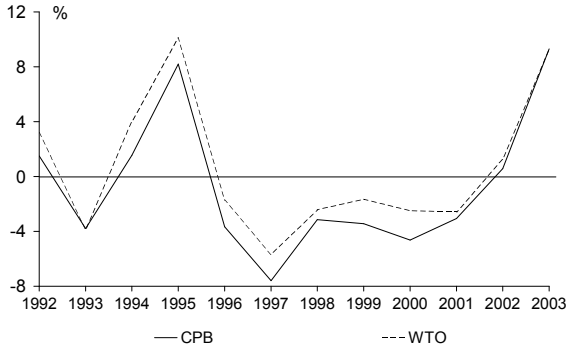


% difference in index



1-year %



%-points difference in 1-year %

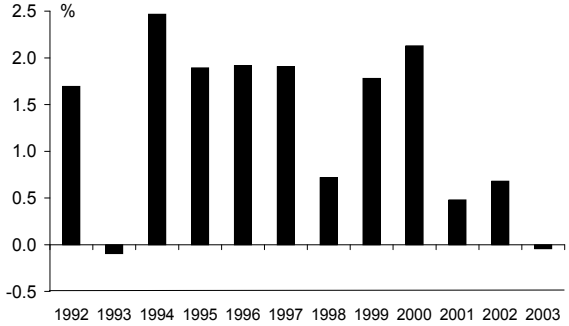


Table 4.3 Comparison of CPB and WTO world export price manufactured goods

	CPB	WTO	WTO-CPB	
	Annual percentage changes			
1992	1.5	3.2	1.7	
1993	– 3.8	– 3.9	– 0.1	
1994	1.5	4.0	2.5	
1995	8.2	10.1	1.9	
1996	– 3.7	– 1.7	1.9	
1997	– 7.6	– 5.7	1.9	
1998	– 3.1	– 2.4	0.7	
1999	– 3.4	– 1.7	1.8	
2000	– 4.6	– 2.5	2.1	
2001	– 3.1	– 2.6	0.5	
2002	0.6	1.3	0.7	
2003	9.3	9.3	0.0	
Correlation			0.98	
Mean	– 0.7	0.6		
mean difference			1.3	
mean absolute difference			1.3	
biggest negative difference			– 0.1	(in 1993)
biggest positive difference			2.5	(in 1994)
differences in acceleration			18.2%	

5 Final remarks

The CPB world trade series provide more up-to-date information than other available series, making it clearly more useful in assessing the current economic situation (*nowcasting*). With good information on the current economic situation essential for forecasting,[35] this up-to-date information enhances the accuracy of the CPB forecasts of the world economy and thus for the Dutch economy.

The CPB series contains up to four months more recent information than the world trade series presented in the OECD Main Economic Indicators (MEI). Moreover, the most recent data are more based on actual data for the non-OECD countries and less on projections and assumptions. A third essential advantage of the CPB world trade database above the MEI is that it contains the underlying series, allowing more detailed analysis of world trade and the calculation of export market growth. A fourth advantage is that the CPB world trade volume series is accompanied by a world trade price series.

In the future, the CPB trade database may be elaborated by introducing foreign trade prices for more individual non-OECD countries, reducing the role of constructed prices. Moreover, it is considered to shift to a chain-link approach in the construction of trade prices on non-OECD regions.

[35] To quote Fed-governor Bernanke: " One of the biggest practical challenges of making monetary policy--and a prerequisite for any serious forecasting exercise--is getting an accurate assessment of the current economic situation" ; Ben. S. Bernanke, 2005, Panel Discussion: The Transition from Academic to Policymaker, speech at Annual Meeting of the American Economic Association, Philadelphia, Pennsylvania, January 7, www.federalreserve.gov

Annex: World trade data by source

Annex Table A.1 **World trade volume series by source**

	CPB	OECD MEI	OECD EO	IMF WEO goods & services	IMF WEO goods	WTO
	Growth rates					
1992	5.7	6.8	4.6	4.5	4.3	5.0
1993	3.9	5.0	4.5	3.7	4.3	4.3
1994	10.9	10.1	8.9	9.1	10.3	9.3
1995	9.9	9.2	8.6	9.2	10.0	7.7
1996	7.5	7.5	7.1	7.1	7.2	5.1
1997	10.6	10.6	10.1	10.5	10.9	9.4
1998	5.0	4.5	4.0	4.4	4.8	4.6
1999	5.8	6.9	6.4	5.9	5.9	5.3
2000	13.9	12.5	12.3	12.5	13.3	10.9
2001	0.4	0.0	0.1	0.2	– 0.5	– 0.5
2002	3.4	3.6	3.7	3.3	3.5	2.9
2003	5.8	4.8	5.1	5.1	5.5	4.8
average	6.9	6.8	6.3	6.3	6.6	5.7
minimum	0.4	0.0	0.1	0.2	– 0.5	– 0.5
maximum	13.9	12.5	12.3	12.5	13.3	10.9

Annex Table A.2 **World trade prices by source, in US dollars**

	CPB	OECD	IMF goods	IMF g&s	WTO
	Percentage changes				
1992	1.0	2.3	2.2	2.6	1.3
1993	– 4.7	– 5.2	– 4.6	– 3.8	– 4.6
1994	2.7	3.0	2.5	2.5	3.8
1995	8.9	9.6	9.2	8.8	10.9
1996	– 2.7	– 1.1	– 1.8	– 1.5	– 0.4
1997	– 6.6	– 6.0	– 6.3	– 5.9	– 5.6
1998	– 6.3	– 4.8	– 6.5	– 5.5	– 5.4
1999	– 2.0	– 1.7	– 1.6	– 1.9	– 1.1
2000	– 0.3	– 0.1	0.0	– 0.6	2.1
2001	– 4.3	– 3.1	– 3.6	– 3.4	– 3.3
2002	0.6	0.8	0.7	1.1	1.1
2003	10.0	9.9	10.4	10.4	10.6
average	– 0.3	0.3	0.1	0.2	0.8
minimum	– 6.6	– 6.0	– 6.5	– 5.9	– 5.6
maximum	10.0	9.9	10.4	10.4	10.9

Annex Table A.3	World trade prices manufactures by source, in US dollars			
	CPB	UN	IMF	WTO
	Percentage changes			
1992	1.5	3.0	3.5	3.2
1993	– 3.8	– 5.0	– 5.7	– 3.9
1994	1.5	2.6	3.1	4.0
1995	8.2	10.3	10.3	10.1
1996	– 3.7	– 3.4	– 3.2	– 1.7
1997	– 7.6	– 6.8	– 8.1	– 5.7
1998	– 3.1	– 4.0	– 1.7	– 2.4
1999	– 3.4	– 4.5	– 1.9	– 1.7
2000	– 4.6	– 4.7	– 5.6	– 2.5
2001	– 3.1	– 2.0	– 2.8	– 2.6
2002	0.6	1.5	2.4	1.3
2003	9.3	9.3	13.2	9.3
Average	– 0.7	– 0.3	0.3	0.6
Minimum	– 7.6	– 6.8	– 8.1	– 5.7
Maximum	9.3	10.3	13.2	10.1

World trade series are regularly updated and revised (monthly for the CPB and OECD MEI, half yearly for the OECD Economic Outlook and the IMF World Economic Outlook and yearly for the WTO). The series presented in this Memorandum are taken from:

- CPB: World Trade Monitor of December 2004
- OECD MEI: December 2004
- OECD Economic Outlook: EO76, November 2004
- IMF World Economic Outlook: September 2004
- WTO: International Trade Statistics, October 2004